

REMARKS

Claim Rejections:

Claims 1-10 remain in this application. Claims 1 and 7 have been amended. Claim 16 has been added. Claims 11-15 have been canceled.

Restriction Requirement:

Applicants hereby affirm election of Group I claims 1-10. Group II claims 11-15 have been canceled.

Rejections Under 35 U.S.C. 103:

Claims 1-6 were rejected under 35 U.S.C. 103(a) as being obvious over Davison (U.S. Pub. 2004/0266064) (hereinafter "Davison") in view of Hanson et al. (U.S. Pat. 6,962,670) (hereinafter "Hanson").

Under 35 U.S.C. 103(c), this rejection of claims 1-6 should be withdrawn. Subject matter that qualifies as prior art only under 35 U.S.C. 102(e) does not preclude patentability if the reference and the application were, at the time the application was made, owned by the same person or subject to an obligation of assignment to the same person (35 U.S.C. 103(c)). Davison qualifies as prior art under 35 U.S.C. 102(e), and not under the other sections of 35 U.S.C. 102. Davison is assigned to the Intel Corporation (as recorded on December 8, 2003 at Reel 014790, Frame 0846). The present patent application is also assigned to the Intel Corporation (as recorded on December 3, 2003 at Reel 014790, Frame 0521), and under the inventor's employment agreement, was subject to an obligation of assignment to the Intel

Corporation. Thus, under 35 U.S.C. 103(c), Davison does not preclude patentability of the pending claims, and this rejection of claims 1-6 should be withdrawn.

Claims 7-10 were rejected under 35 U.S.C. 103(a) as being obvious over Koning et al. (U.S. Pub. 2005/0116299) (hereinafter "Koning") in view of Hanson.

Under 35 U.S.C. 103(c), this rejection of claims 7-10 should be withdrawn. Subject matter that qualifies as prior art only under 35 U.S.C. 102(e) does not preclude patentability if the reference and the application were, at the time the application was made, owned by the same person or subject to an obligation of assignment to the same person (35 U.S.C. 103(c)). Koning qualifies as prior art under 35 U.S.C. 102(e), and not under the other sections of 35 U.S.C. 102. Koning is assigned to the Intel Corporation (as recorded on November 4, 2004 at Reel 015338, Frame 0071). The present patent application is also assigned to the Intel Corporation (as recorded on December 3, 2003 at Reel 014790, Frame 0521), and under the inventor's employment agreement, was subject to an obligation of assignment to the Intel Corporation. Thus, under 35 U.S.C. 103(c), Koning does not preclude patentability of the pending claims, and this rejection of claims 7-10 should be withdrawn.

Claims 1-10 were rejected under 35 U.S.C. 103(a) as being obvious over Resnick et al. (U.S. Pub. 2004/0224261) (hereinafter "Resnick") in view of Hanson.

Independent claims 1 and 7 have both been amended to recite with specificity that the detected radiation is used to determine whether the trench has been successfully formed (claim 1) or whether maintenance on the tool should be performed (claim 7). As the cited references fail to disclose or suggest such methods, Applicants request withdrawal of the rejections.

Independent claim 1 recites a method in which it may be determined whether a trench is successfully formed with a trench bottom substantially free of fluorescent material-

containing dielectric, or whether the trench formation was unsuccessful due to too much fluorescent material-containing dielectric at the bottom of the trench. Independent claim 7 recites a method in which it may be determined whether a tool has fluorescent material-containing dielectric stuck to it and therefore should be maintained or not. Claim 1 thus is not concerned with measuring the thickness of a material, as it is concerned with making sure a material is absent. Similarly, claim 7 is not concerned with measuring the thickness of a material, as it is concerned with checking to see if a material is present.

Resnick, in contrast, discloses forming a pattern in a patterning layer 210 in which the pattern does not go all the way through the material of the patterning layer. As shown in the final stage of both Figures 1 and 2, in each case a substantial amount of the patterned layer 117 or 215 remains at the bottom of each trench, between the bottom of the trench and the substrate 100 or 200. Nowhere does Resnick indicate that the remaining material is undesirable. Because Resnick teaches that patterned material **will** remain at the bottom of the trench, Resnick fails to teach or suggest that it would be desirable to determine whether the bottom of the trench is free from such material. Similarly, Nowhere does Resnick teach or suggest anything about tool maintenance.

Hanson is concerned with making sure a thickness of material is uniform. The material is typically a layer used to make an article (Hanson, col. 3, lines 57-58), where the presence of the material is desired to make sure the article structure is as desired, such as layers used to create a bottle (Hanson, col. 13, lines 15-19). To be able to measure this thickness, the material that contains the fluorescent material must be clear (Hanson, col. 11, lines 23-27), otherwise all thicknesses would appear to be the same after a certain point. Each claim of Hanson is concerned with measuring a thickness (claim 1), measuring non-uniformity of thickness (claim 18), or controlling the thickness (claim 32). In all cases

Hanson is concerned with making sure a material is present in a desired amount. Nowhere does Hanson teach or suggest that the absence of a material could be measured through fluorescent radiation.

Should the Examiner persist in the rejections, proper prima facie rejections are requested; the rejection set forth in the Office Action does not meet the standards set forth by statute, case law, or the MPEP. The rejection states that the rejection to combine Resnick and Hanson is to make a determination of uniformity of the layer to be imprinted. However, because the references themselves do not contain such a motivation, the rejection amounts to the application of hindsight reasoning. Under MPEP 706.02(j) and 2143 and under *In re Vaeck*, the rejection is improper and should be withdrawn.

The rejection includes statements that attempt to provide support for the proffered motivation to combine. Some of the multiple problems with these statements are addressed below:

“Detecting Critical Presence of Material”

In attempting to explain the motivation, the rejection states that it would have been obvious to include in Resnick, “the technique of **detecting critical presence of material** by measuring thickness,” (emphasis added) and that, “Resnick’s template (tool) comprehends in the structure a certain thickness of material; hence, uniformity of the thickness of the layer would be critical to a successful imprint.” However, neither of the cited references teach or suggest that the presence of material is critical or that a uniformity of layer thickness in Resnick is critical. As the references do not teach or suggest the combination, the rejection amounts to the application of hindsight reasoning, which can not be used to support a proper prima facie rejection under 35 U.S.C. 103. Should the Examiner persist in setting forth this

statement as justification for a rejection, Applicants request that the Examiner set forth where within Resnick or Hanson such information may be found.

“Resnick’s Template Comprehends... A Certain Thickness”

The rejection states that, “Resnick’s template (tool) comprehends in the structure a certain thickness of material; hence, uniformity of the thickness of the layer would be critical to a successful imprint.” However, there is no support within Resnick itself for this statement. Again, as the reference does not teach or suggest the combination, the rejection amounts to the application of hindsight reasoning, which can not be used to support a proper prima facie rejection under 35 U.S.C. 103. Should the Examiner persist in setting forth this statement as justification for a rejection, Applicants request that the Examiner set forth where within Resnick such information may be found.

Claims 6 and 10

Further, no prima facie rejection has been set forth regarding claims 6 and 10, which recite determining trench formation has failed in response to detecting an intensity of radiation in excess of a threshold intensity (claim 6) or maintaining the imprinting tool in response to detecting an intensity of radiation in excess of a threshold intensity (claim 10). The rejection simply states, “Since the method measure magnitude (intensity) of the fluorescing signal, the comparison of the measurement to a threshold value provides a means for determination of failure.” However, nothing within the references provides any support for this statement. Nor do the references contain any teaching or suggestion for the failure modes set forth in the claims. Further, because Hanson is only concerned with measuring a thickness, it contains no teaching or suggestion of threshold values or actions or determinations in response to radiation exceeding a threshold value. Because the rejections

have no basis in the references, the rejections are simply applications of hindsight reasoning, and are not proper prima facie rejections of the claims. The rejections should be withdrawn.

Respectfully submitted,

Date: December 18, 2006

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